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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/782,706 | 02/13/2001 | Yoshio Hagihara | 15162/03270 | 5328 |

24367 7590 06/20/2003

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EXAMINER

HO, ALLEN C

ART UNIT PAPER NUMBER

2882

DATE MAILED: 06/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/782,706

Applicant(s)

HAGIHARA, YOSHIO

Examiner

Allen C. Ho

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 March 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10-16 is/are allowed.
- 6) ☒ Claim(s) 1-3, 7-9 and 17 is/are rejected.
- 7) ☒ Claim(s) 4-6 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 February 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-3 and 7-9 are rejected under 35 U.S.C. 102(e) as being anticipated by Shinotsuka *et al.* (U. S. Patent No. 6,191,408 B1).

With regard to claim 1, Shinotsuka *et al.* disclosed an image-sensing device comprising: an image sensor including: a photoelectric conversion portion (1) that outputs an analog electric signal natural-logarithmically proportional to an amount of incident light (Fig. 3); and an output circuit (60) that includes a temperature sensor (14) that corrects the analog electrical signal output (V_0) from the photoelectric conversion portion on a basis of ambient temperature detected by the temperature sensor, wherein the temperature sensor is positioned in the image sensor.

With regard to claim 2, Shinotsuka *et al.* disclosed an image-sensing device as claimed in claim 1, wherein the output circuit generates a factor (α_T) that varies with the ambient temperature inside the image-sensing device as detected by the temperature sensor, and multiplies (63) an output (V_0) from the photoelectric conversion portion by the factor.

With regard to claim 3, Shinotsuka *et al.* disclosed an image-sensing device as claimed in claim 2, wherein the factor becomes lower as the ambient temperature inside the image-sensing device becomes higher (column 12, lines 53-67).

With regard to claim 7, Shinotsuka *et al.* disclosed an image-sensing device as claimed in claim 1, wherein the photoelectric conversion portion comprises: a photosensor (photodiode) that outputs an electrical signal proportional to the amount of incident light; and a transistor (Fig. 2) that is connected in series with the photosensor and that operates in a subthreshold region so as to convert electrical signal output from the photosensor into a signal logarithmically proportional to the amount of incident light (Fig. 3).

With regard to claim 8, Shinotsuka *et al.* disclosed an image-sensing device as claimed in claim 1, wherein, as the photoelectric conversion portion, a plurality of photoelectric conversion portions are provided, and the output circuit corrects all electrical signals output from the plurality of photoelectric conversion portions (column 12, lines 55-58).

With regard to claim 9, Shinotsuka *et al.* disclosed an image-sensing device as claimed in claim 8, wherein the plurality of photoelectric conversion portions are arranged in a matrix (Fig. 1).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shinotsuka *et al.* (U. S. Patent No. 6,191,408 B1) as applied to claim 1 above.

With regard to claim 17, Shinotsuka *et al.* disclosed an image-sensing device as claimed in claim 1.

However, Shinotsuka *et al.* did not teach that the image-sensing device further comprises an A/D converter, which is positioned outside the image sensor and converts the analog electrical signal corrected by the output circuit to a digital circuit.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide an A/D converter to convert the analog electrical signal to a digital signal, since a person would be motivated to transfer the image to a computer for image processing.

5. Claims 1, 7-9, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakaguchi *et al.* (U. S. Patent No. 6,075,562) in view of Takada *et al.* (U. S. Patent No. 4,973,833).

With regard to claim 1, Sakaguchi *et al.* disclosed an image-sensing device comprising: an image sensor including: a photoelectric conversion portion (103) that outputs an analog electric signal; and an output circuit that includes a temperature sensor (130) that corrects the analog electrical signal output from the photoelectric conversion portion on a basis of ambient temperature detected by the temperature sensor, wherein the temperature sensor is positioned in the image sensor.

However, Sakaguchi *et al.* did not teach that the photoelectric conversion portion outputs an analog signal natural-logarithmically proportional to an amount of incident light.

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Takada *et al.* disclosed an image sensor that includes logarithmic converters, which convert analog electric signals into signals that are natural-logarithmically proportional to an amount of incident light.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to convert analog electric signals into signals that are natural-logarithmically proportional to an amount of incident light, since a person would be motivated to increase the dynamic range of an image sensor.

With regard to claim 7, Sakaguchi *et al.* and Takada *et al.* disclosed an image-sensing device as claimed in claim 1, wherein the photoelectric conversion portion comprises: a photosensor (photodiode) that outputs an electrical signal proportional to the amount of incident light; and a transistor (inherent, this is just a switch) that is connected in series with the photosensor and that operates in a subthreshold region so as to convert electrical signal output from the photosensor into a signal logarithmically proportional to the amount of incident light.

With regard to claim 8, Sakaguchi *et al.* and Takada *et al.* disclosed an image-sensing device as claimed in claim 1, wherein, as the photoelectric conversion portion, a plurality of photoelectric conversion portions are provided, and the output circuit corrects all electrical signals output from the plurality of photoelectric conversion portions (inherent).

With regard to claim 9, Sakaguchi *et al.* and Takada *et al.* disclosed an image-sensing device as claimed in claim 8, wherein the plurality of photoelectric conversion portions are arranged in a matrix (CCD).

With regard to claim 17, Sakaguchi *et al.* and Takada *et al.* disclosed an image-sensing device as claimed in claim 1, further comprising: an A/D converter (105) which is positioned

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outside the image sensor and converts the analog electrical signal corrected by the output circuit to a digital signal.

6. Claims 1, 7-9, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka *et al.* (U. S. Patent No. 5,335,072) in view of in view of Takada *et al.* (U. S. Patent No. 4,973,833).

With regard to claim 1, Tanaka *et al.* disclosed an image-sensing device comprising: an image sensor including: a photoelectric conversion portion (2) that outputs an analog electric signal; and an output circuit that includes a temperature sensor (17) that corrects the analog electrical signal output from the photoelectric conversion portion on a basis of ambient temperature detected by the temperature sensor, wherein the temperature sensor is positioned in the image sensor.

However, Tanaka *et al.* did not teach that the photoelectric conversion portion outputs an analog signal natural-logarithmically proportional to an amount of incident light.

Takada *et al.* disclosed an image sensor that includes logarithmic converters, which convert analog electric signals into signals that are natural-logarithmically proportional to an amount of incident light.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to convert analog electric signals into signals that are natural-logarithmically proportional to an amount of incident light, since a person would be motivated to increase the dynamic range of an image sensor.

With regard to claim 7, Tanaka *et al.* and Takada *et al.* disclosed an image-sensing device as claimed in claim 1, wherein the photoelectric conversion portion comprises: a photosensor

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(photodiode) that outputs an electrical signal proportional to the amount of incident light; and a transistor (inherent, this is just a switch) that is connected in series with the photosensor and that operates in a subthreshold region so as to convert electrical signal output from the photosensor into a signal logarithmically proportional to the amount of incident light.

With regard to claim 8, Tanaka *et al.* and Takada *et al.* disclosed an image-sensing device as claimed in claim 1, wherein, as the photoelectric conversion portion, a plurality of photoelectric conversion portions are provided, and the output circuit corrects all electrical signals output from the plurality of photoelectric conversion portions (inherent).

With regard to claim 9, Tanaka *et al.* and Takada *et al.* disclosed an image-sensing device as claimed in claim 8, wherein the plurality of photoelectric conversion portions are arranged in a matrix (CCD).

With regard to claim 17, Tanaka *et al.* and Takada *et al.* disclosed an image-sensing device as claimed in claim 1, further comprising: an A/D converter (4) which is positioned outside the image sensor and converts the analog electrical signal corrected by the output circuit to a digital signal.

Allowable Subject Matter

7. Claims 4-6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter:

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The allowable subject matter in claims 4-6 refers to specific constructions of an output circuit; these constructions are neither shown nor fairly suggested in the prior art.

9. Claims 10-16 are allowed.

10. The following is an examiner's statement of reasons for allowance:

The allowable subject matter in claims 10-16 refers to an image-sensing device comprising: a plurality of pixels of which each outputs a plurality of color signals proportional to amounts of light received in different color ranges; an initial state setting portion that corrects the plurality of color signals output from each pixel in such a way that the color signals have a specific correlation with one another at a given color temperature; a color temperature detection portion that detects a color temperature of a subject to be sensed; and a white balance adjustment portion that further corrects the plurality of color signals already corrected by the initial state setting portion in such a way that the color signals have the specific correlation with one another at the color temperature detected by the color temperature detection portion.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

11. The applicant argues that the references do not teach an image sensor that includes an output circuit having a temperature sensor positioned in the image sensor. The examiner respectfully disagrees. The recitation "an image sensor" has not been given patentable weight

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because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951). Thus the entire circuit disclosed by these references could be construed as an "an image sensor", and temperature sensor located anywhere in the circuit would read on the claim.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- (1) Kusaka *et al.* (U. S. Patent No. 6,552,332 B2) disclosed an image-sensing apparatus comprising a temperature sensor.
- (2) Itakura *et al.* (U. S. Patent No. 4,910,598) disclosed a solid-state television camera comprising a temperature sensor.
- (3) Levine (U. S. Patent No. 4,703,442) disclosed a solid-state imager that performs temperature correction on the analog signal.

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**

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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen C. Ho whose telephone number is (703) 308-6189. The examiner can normally be reached on Monday - Friday from 8:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached at (703) 305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0530.

Allen C. Ho
Examiner
Art Unit 2882

ACH
June 13, 2003


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